



## NUCLEAR REGULATORY COMMISSION

[Docket No. 50-184; NRC-2023-0039]

National Institute of Standards and Technology

National Bureau of Standards Test Reactor

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** License amendment application; opportunity to comment, request a hearing, and petition for leave to intervene.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC, the Commission) is considering issuance of an amendment to Renewed Facility Operating License No. TR-5, issued to the National Institute of Standards and Technology (NIST, the licensee), for operation of the National Bureau of Standards Test Reactor (NBSR). The proposed amendment would authorize the use of a specific method to perform core loading analyses of the NBSR.

**DATES:** Submit comments by [INSERT DATE 14 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. Requests for a hearing or petition for leave to intervene must be filed by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

**ADDRESSES:** You may submit comments by any of the following methods; however, the NRC encourages electronic comment submission through the **Federal rulemaking website**:

- **Federal rulemaking website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2023-0039**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: [Stacy.Schumann@nrc.gov](mailto:Stacy.Schumann@nrc.gov). For technical questions, contact the individual listed in the "For Further Information Contact" section of this document.

- **Mail comments to:** Office of Administration, Mail Stop: TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Program Management, Announcements and Editing Staff.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

**FOR FURTHER INFORMATION CONTACT:** Patrick Boyle, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; telephone: 301-415-3936; email: Patrick.Boyle@nrc.gov.

**SUPPLEMENTARY INFORMATION:**

**I. Obtaining Information and Submitting Comments**

**A. Obtaining Information**

Please refer to Docket ID **NRC-2023-0039** when contacting the NRC about the availability of information for this action. You may obtain publicly available information related to this action by any of the following methods:

- **Federal Rulemaking Website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2023-0039**.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov). The license amendment request is available in ADAMS under Package Accession No. ML23033A114.

- **NRC’s PDR:** You may examine and purchase copies of public documents, by appointment, at the NRC’s PDR, Room P1 B35, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. To make an appointment to visit the PDR, please send an email to [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov) or call 1-800-397-4209 or 301-415-

4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

## B. Submitting Comments

The NRC encourages electronic comment submission through the **Federal rulemaking website** (<https://www.regulations.gov>). Please include Docket ID **NRC-2023-0039** in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <https://www.regulations.gov> as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

## II. Introduction

The NRC is considering issuance of an amendment to Renewed Facility Operating License No. TR-5, issued to NIST, for operation of the NBSR, located in Montgomery County, Maryland.

The proposed amendment would revise the NBSR safety analysis report allowing a change to the method used to analyze the core loading pattern. The licensee was developing its core loading pattern and only recently determined that a license amendment would be required prior to any startup with the proposed core. NIST is otherwise prepared to resume operations upon any approval by the NRC of its separate restart request; therefore, a delay in the NRC's acting on the license amendment request could delay the ability of the NBSR to resume operations. Accordingly, consistent with

paragraph 50.91(a)(6) of title 10 of the *Code of Federal Regulations* (10 CFR), the NRC finds that exigent circumstances exist, in that the licensee and the NRC must act quickly and that time does not permit the NRC to publish a *Federal Register* notice allowing 30 days for prior public comment.

Before any issuance of the proposed license amendment, the NRC will need to make the findings required by the Atomic Energy Act of 1954, as amended, and NRC's regulations.

Pursuant to 10 CFR 50.91(a)(6) for amendments to be granted under exigent circumstances, the NRC has made a proposed determination that the license amendment request involves no significant hazards consideration. Under the NRC's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. As required by 10 CFR 50.91(a), the licensee has provided its analysis of the issue of no significant hazards consideration, which is presented as follows:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

AFMS [alternative fuel management scheme] loadings deviate from the core loading scheme as described in the FSAR [Final Safety Analysis Report] 4.5.1.1.2 "Fuel Management Scheme". This amendment introduces a new section to the updated FSAR, "4.5.1.1.3 Alternative Fuel Management Schemes (AFMS)", which describes bounding conditions and analysis requirements for any AFMS. The amendment also introduces an engineering procedure, namely "NBSR-0018-DOC-00 NBSR Alternative Core Loading Schemes Analysis Procedure" which describes the OFMS [original fuel management scheme] and AFMS, a basis for the analysis, providing limitations to

evaluate potential AFMS, detailed safety review for a demonstration AFMS, along with a discussion of results and conclusions to be included in subsequent ECNs [engineering change notice] dealing with similar AFMS core loadings. The procedure provides a basis to analyze core loading so that none of the Technical Specifications (TS) are exceeded.

Several accident scenarios and therefore consequences may be affected by AFMS core loading deviations. Particularly, all accidents shown in Table 1 are required to be reevaluated for any AFMS core loading. Other accident scenarios given in the FSAR, including “Loss of Primary Coolant” (a major rupture in the cold leg of the primary system is assumed, which leads to draining the reactor core), “Maximum Hypothetical Accident (MHA)”, “Experiment Malfunction” and “External Event” are independent of core loading changes and therefore remain unchanged. Additionally, Natural Circulation Cooling at Low Power Operation must be analyzed for each AFMS to show compliance with Technical Specification 2.2. Natural Circulation Cooling at Low Power Operation is not an accident scenario but an analysis to show natural circulation at low power operations.

Note that all of the accident scenarios and Natural Circulation Cooling at Low Power Operation conditions are analyzed using the RELAP5 [Reactor Excursion and Leak Analysis Program] model as described in the “NBSR-0018-DOC-00 NBSR Alternative Core Loading Schemes Analysis Procedure”. The misloading accident is the only one that will require unique power distributions from corresponding MCNP [Monte Carlo N-Particle] simulations with the misloaded fuel configuration. Some scenario conditions are updated based on facility changes and available new information. “NBSR-0018-DOC-00 Appendix C” provides descriptions and modifications for accident scenarios.

	Accident Sequence	Section in the SAR
#1	Startup Accident	13.1.2.2.2.1
#2	Maximum Reactivity Insertion Accident	13.2.2
#3	Loss of Offsite Power	13.1.4.1

#4	Loss of Offsite Power with Shutdown Pump failure	13.1.4.5
#5	Seizure of One Primary Pump	13.1.4.2
#6	Throttling of Coolant Flow to the Outer Plenum	13.1.4.4
#7	Throttling of Coolant Flow to the Inner Plenum	13.1.4.3
#8	Misloading of Fuel	13.1.5

Table 1. The accident sequences to be re-analyzed, and their references in the SAR

Based on detailed analysis provided in the technical report, and because these AFMS accident scenarios are specifically analyzed for probability and consequences, there are, by definition, no changes in the probability of occurrences or the consequences of previously analyzed accidents.

Therefore, the proposed FSAR amendment allowing analysis of AFMS does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The requested amendment to the facility license involves a SAR change to describe engineering analysis procedures for any [AFMS] wherein which the NBSR core is loaded with a different core loading pattern than as described in the updated FSAR. An AFMS is any core loading pattern that deviates from the [OFMS] in a manner such that the number of the specific type of fuel elements, such as fresh, or used is different than usual and/or their locations in the core are modified. As there are no other changes besides that of fuel loading, changes in the core loading pattern do not initiate a different kind of accident.

Therefore, the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The requested amendment to the facility license involves a SAR change to describe engineering analysis procedures for any Alternative Fuel Management. The requested amendment to the facility license involves a SAR change to describe engineering analysis procedures for any [AFMS] wherein which the NBSR core is loaded with a different core loading pattern than as described in the updated FSAR. An AFMS is any core loading pattern that deviates from the [OFMS] in a manner such that the number of the specific type of fuel elements, such as fresh, or used is different than usual and/or their locations in the core are modified. The AFMS can be deemed acceptable as long as the proposed AFMS is analyzed according to the "NBSR-0018-DOC-00" and found to be within the updated FSAR, Technical Specifications limitations and boundary conditions listed therein. The boundary conditions are based on the Technical Specifications and updated FSAR requirements. Because these alternate fuel management schemes are specifically analyzed for a reduction in margin of safety, there is, by definition, no significant reduction in margin of safety. The proposed amendment contains no changes in the Technical Specification or other safety limitations as described in the updated FSAR.

Therefore, the proposed amendment of the SAR in allowing this operation does not involve a significant reduction in a margin of safety.

The NRC staff has reviewed the licensee's analysis and, based on this review, it appears that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC

staff proposes to determine that the license amendment request involves a no significant hazards consideration.

The NRC is seeking public comments on this proposed determination that the license amendment request involves no significant hazards consideration. Any comments received within 14 days after the date of publication of this notice will be considered in making any final determination.

Normally, the Commission will not issue the amendment until the expiration of the 14-day notice period. However, if circumstances change during the notice period, such that failure to act in a timely way would result, for example, in prevention of resumption of operation the Commission may issue the license amendment before the expiration of the 14-day notice period, provided that its final determination is that the amendment involves no significant hazards consideration. The final determination will consider all public and State comments received. If the Commission takes this action, it will publish in the *Federal Register* a notice of issuance. The Commission expects that the need to take this action will occur very infrequently.

### **III. Opportunity to Request a Hearing and Petition for Leave to Intervene**

Within 60 days after the date of publication of this notice, any person (petitioner) whose interest may be affected by this action may file a request for a hearing and petition for leave to intervene (petition) with respect to the action. Petitions shall be filed in accordance with the Commission's "Agency Rules of Practice and Procedure" in 10 CFR part 2. Interested persons should consult 10 CFR 2.309. If a petition is filed, the presiding officer will rule on the petition and, if appropriate, a notice of a hearing will be issued.

Petitions must be filed no later than 60 days from the date of publication of this notice in accordance with the filing instructions in the "Electronic Submissions (E-Filing)" section of this document. Petitions and motions for leave to file new or amended contentions that are filed after the deadline will not be entertained absent a

determination by the presiding officer that the filing demonstrates good cause by satisfying the three factors in 10 CFR 2.309(c)(1)(i) through (iii).

If a hearing is requested and the Commission has not made a final determination on the issue of no significant hazards consideration, the Commission will make a final determination on the issue of no significant hazards consideration, which will serve to establish when the hearing is held. If the final determination is that the amendment request involves no significant hazards consideration, the Commission may issue the amendment and make it immediately effective, notwithstanding the request for a hearing. Any hearing would take place after issuance of the amendment. If the final determination is that the amendment request involves a significant hazards consideration, then any hearing held would take place before the issuance of the amendment unless the Commission finds an imminent danger to the health or safety of the public, in which case it will issue an appropriate order or rule under 10 CFR part 2.

A State, local governmental body, Federally recognized Indian Tribe, or designated agency thereof, may submit a petition to the Commission to participate as a party under 10 CFR 2.309(h) no later than 60 days from the date of publication of this notice. Alternatively, a State, local governmental body, Federally recognized Indian Tribe, or agency thereof may participate as a non-party under 10 CFR 2.315(c).

For information about filing a petition and about participation by a person not a party under 10 CFR 2.315, see ADAMS Accession No. ML20340A053 (<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML20340A053>) and on the NRC's public website at <https://www.nrc.gov/about-nrc/regulatory/adjudicatory/hearing.html#participate>.

#### **IV. Electronic Submissions (E-Filing)**

All documents filed in NRC adjudicatory proceedings including documents filed by an interested State, local governmental body, Federally recognized Indian Tribe, or designated agency thereof that requests to participate under 10 CFR 2.315(c), must be filed in accordance with 10 CFR 2.302. The E-Filing process requires participants to

submit and serve all adjudicatory documents over the internet, or in some cases, to mail copies on electronic storage media, unless an exemption permitting an alternative filing method, as further discussed, is granted. Detailed guidance on electronic submissions is located in the “Guidance for Electronic Submissions to the NRC” (ADAMS Accession No. ML13031A056) and on the NRC’s public website at <https://www.nrc.gov/site-help/e-submittals.html>.

To comply with the procedural requirements of E-Filing, at least 10 days prior to the filing deadline, the participant should contact the Office of the Secretary by email at [Hearing.Docket@nrc.gov](mailto:Hearing.Docket@nrc.gov), or by telephone at 301-415-1677, to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating; and (2) advise the Secretary that the participant will be submitting a petition or other adjudicatory document (even in instances in which the participant, or its counsel or representative, already holds an NRC-issued digital ID certificate). Based upon this information, the Secretary will establish an electronic docket for the proceeding if the Secretary has not already established an electronic docket.

Information about applying for a digital ID certificate is available on the NRC’s public website at <https://www.nrc.gov/site-help/e-submittals/getting-started.html>. After a digital ID certificate is obtained and a docket created, the participant must submit adjudicatory documents in Portable Document Format. Guidance on submissions is available on the NRC’s public website at <https://www.nrc.gov/site-help/electronic-sub-ref-mat.html>. A filing is considered complete at the time the document is submitted through the NRC’s E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m. ET on the due date. Upon receipt of a transmission, the E-Filing system time-stamps the document and sends the submitter an email confirming receipt of the document. The E-Filing system also distributes an email that provides access to the document to the NRC’s Office of the General Counsel and

any others who have advised the Office of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the document on those participants separately. Therefore, applicants and other participants (or their counsel or representative) must apply for and receive a digital ID certificate before adjudicatory documents are filed to obtain access to the documents via the E-Filing system.

A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the NRC's public website at <https://www.nrc.gov/site-help/e-submittals.html>, by email to [MSHD.Resource@nrc.gov](mailto:MSHD.Resource@nrc.gov), or by a toll-free call at 1-866-672-7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and 6 p.m., ET, Monday through Friday, except Federal holidays.

Participants who believe that they have good cause for not submitting documents electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing electronically and requesting authorization to continue to submit documents in paper format. Such filings must be submitted in accordance with 10 CFR 2.302(b)-(d). Participants filing adjudicatory documents in this manner are responsible for serving their documents on all other participants. Participants granted an exemption under 10 CFR 2.302(g)(2) must still meet the electronic formatting requirement in 10 CFR 2.302(g)(1), unless the participant also seeks and is granted an exemption from 10 CFR 2.302(g)(1).

Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing docket, which is publicly available at <https://adams.nrc.gov/ehd>, unless excluded pursuant to an order of the presiding officer. If you do not have an NRC-issued digital ID certificate as previously described, click "cancel" when the link requests certificates and you will be automatically directed to the NRC's electronic hearing dockets where you will be able to access any publicly available documents in a particular hearing docket. Participants are requested not to include personal privacy information such as social security numbers, home addresses, or personal phone

numbers in their filings unless an NRC regulation or other law requires submission of such information. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants should not include copyrighted materials in their submission.

For further details with respect to this action, see the application for license amendment dated February 1, 2023.

*Attorney for licensee:* Henry N. Wixon, Chief of Counsel, National Institute of Standards and Technology, 100 Bureau Drive, Stop 1052, Gaithersburg, MD 20899-1052.

*NRC Branch Chief:* Joshua Borromeo.

Dated: February 7, 2023.

For the Nuclear Regulatory Commission.

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[FR Doc. 2023-02840 Filed: 2/9/2023 8:45 am; Publication Date: 2/10/2023]